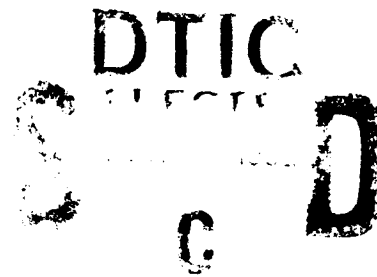


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STUDY AND RECOMMENDATION OF AVAILABLE SOURCES OF SCIENTIFIC AND TECHNICAL NUMERIC DATABASES IN THE GOVERNMENT AND PRIVATE SECTOR

FINAL REPORT

Prepared for:
Defense Technical Information Center
Directorate of Information Science and Technology
Cameron Station
Alexandria, Virginia 22304-6145

February 3, 1992

Contract Number: MDA 903-90-D-0022
Task Order 21

Prepared by:
Ms. Donna Grimes
IIT Research Institute
4600 Forbes Boulevard
Lanham, Maryland 20706



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SCIENTIFIC AND TECHNICAL NUMERIC DATABASES IN THE
GOVERNMENT AND PRIVATE SECTOR

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Directorate of Information Science and Technology
Cameron Station
Alexandria, VA 22304-6145

MDA 903-90-D-0022
TASK ORDER 21

Unclassified, Unlimited

A

The Defense Technical Information Center's (DTIC) mission for the scientific and technical numeric database project is to provide DoD scientists and engineers, the end users, with access to scientific and technical information and data. Until now, DTIC has been providing its users, who are primarily librarians and technical information specialists, access to bibliographic database or pointers to possible resources of numeric data for end users.

In an effort to be more responsive to the DoD community, DTIC has been investigating new services to provide resources directly to the end users. One of these resources is scientific and technical databases. This report focuses on the methodology used to identify and recommend scientific and technical databases that should be accessed or distributed through DTIC. The methodology described is broken into three tasks:

- 1) Determine which databases from DTIC SCITECH Directory meet specified criteria as to users' needs and investigate them further to determine if the data source is a candidate to make available through DTIC.

(continued on next page)

scientific and technical numeric databases; metals; alloys;
mechanical properties; physical properties; chemical
properties ; Thermal properties

30

Unclassified

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Unlimited

- 2) Contact data source distributors to elicit information and provide a comparative view of the selected databases.
- 3) Recommend which of the selected databases could be made available through DTIC based on the comparison of the selected databases.

DATABASE EVALUATION PAPER

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LIST OF ACRONYMS

DTIC	Defense Technical Information Center
DOD	Department of Defense
DGIS	Department of Defense Gateway Information System
WUIS	Work Unit Information System
SCITECH	Scientific and Technical Numeric Database Directory
IR&D	Independent Research and Development
R&D	Research and Development
MPD	Material Properties Data Network
TDS	Technical Database Services
NIST	National Institute of Standards and Technology
ICSTI	International Council on Scientific and Technical Information
STN	Scientific and Technical Information Network
CRA	Corrosion Resistant Alloys
IAC	Information Analysis Center
NARA	National Archives and Record Administration
IHS	Information Handling Services

1.0 INTRODUCTION

1.1 Background

The Defense Technical Information Center's (DTIC) mission for the scientific and technical numeric database project is to provide DoD scientists and engineers, the end users, with access to scientific and technical information and data. Until now, DTIC has been providing its users, who are primarily librarians and technical information specialists, access to bibliographic database or pointers to possible resources of scientific and technical numeric data for the end users. Examples of DTIC resources follow:

1. A collection of information regarding on-going R&D projects, R&T Work Units Information System (WUIS).
2. A collection of citations from the technical reports that DoD and contractors performing work for DoD submit to DTIC, the Technical Reports Database.
3. A collection of research and development efforts in the commercial community, The (IR&D) Independent Research and Development Database.
4. A gateway to information and data sources called the Department of Defense Gateway Information System (DGIS). DGIS connects to a variety of databases and provides processing tools for bibliographic information.

In an effort to be more responsive to the DoD community, DTIC has been investigating new services to provide resources directly to end users and to help intermediaries satisfy end users' requests. One of these resources is scientific and technical databases. Scientific and technical numeric databases are data sources that can help satisfy scientific and engineering needs. Numeric databases are organized collections of numeric data on a topic. These databases permit users to retrieve data for analysis and manipulation of numeric data. Numeric databases may include textual information and numbers in tables or graphs available on a variety of media such as magnetic tape, optical disk, and hardcopy. Database sources can be military handbooks (handbooks that contain military specifications), engineering handbooks (handbooks that contain general engineering principals and formulas), technical reports, and specifications in which a scientist or engineer has measured, observed or calculated numbers. The numbers can represent values for properties, parameters or attributes of elements and substances.

1.2 Objective

The objective of this report is to identify and recommend scientific and technical numeric databases that should be accessed or distributed through DTIC. This objective will be broken out into three tasks:

- (1) Determine which databases from DTIC SCITECH directory meet specified criteria as to user's needs and investigate them further to determine if the data source is a candidate to make available through DTIC.
- (2) Contact data source distributors to elicit information and provide a comparative view of the selected databases.
- (3) Recommend which of the selected databases could be made available through DTIC based on the comparison of the selected databases.

An essential part of this research involved contacting many of the database distributors to determine the appropriateness of the databases involved. Emphasis was placed on consistency in questions asked of each database distributor so that the same type of information could be compared during the study. The results of these contacts are the basis for recommending which databases should be adopted. A detailed description of the contacts, results, and conclusions is included in Appendix A of this report.

1.3 Report Outline

The organization of this report corresponds to the defined tasks outlined in the study objective:

- Methodology - Section 2

This section provides an overview of the process that was used to accomplish the objective. Specific steps taken to identify and evaluate the databases will be explained and issues that occurred during the process will be identified.

- Results - Section 3

This section provides the results of the methodology presented in section two. Overviews of the databases that met the criteria established in section two will be given along with the results of the comparison of the databases.

- Conclusions - Section 4

This section recommends which databases should be adopted by DTIC. In addition, lessons learned during this process will be noted along with topics for further research that have been identified during this task.

2.0 METHODOLOGY

The database evaluation process involved the evaluation of databases identified from two DTIC sources: the Scientific and Technical Numeric Database Directory (SCITECH Directory), and the User Needs Assessment. The Scientific and Technical Numeric Database Directory is a directory that contains pointers to scientific and technical numeric databases. The database was developed as a result of a data call sent by DTIC in the previous year and contains information primarily on materials properties databases. In addition to the SCITECH Directory, the evaluation process also included the results of a needs assessment performed by DTIC. The user needs assessment was sent to scientists and engineers to identify their data needs and sources. These needs were tabulated in a prior task and the results of the tabulation were used in the evaluation process. The steps that were followed during this process are stated below:

1. Determine search criteria as defined by needs assessment.
2. Apply search criteria to SCITECH Directory to determine list of initial databases to further investigate.
3. Determine evaluation criteria to apply to selected databases to indicate whether the data source is a good candidate to access or distribute through DTIC.
4. Contact database distributors to obtain required information to evaluate the databases.
5. Evaluate the databases using criteria specified in step three.
6. Recommend to DTIC which databases should be made available either on-line through DGIS or distributed by DTIC. Establish a procedure that can be set in place to continue this update even after the task has concluded.

Each of these steps will be further explained in the following subsections. The last two steps, Evaluate databases using specified criteria (step 5) and Recommended databases (step 6) will follow in sections three and four respectively.

2.1 Determine Search Criteria

The first step in the methodology was to determine search criteria which could be used to identify a subset of databases to investigate in the study. This was necessary so that the approach being documented could conclude in a timely manner yet still accomplish its objective of setting up a procedure for DTIC to follow after the task had ended. The focus

of the search criteria was to determine the most critical information and data needs identified by the end users and then identify the databases that may meet those needs. The main item used to define the subset of databases was the user needs assessment tabulation. Since the tabulation identified the most critical material groups and classes needed by the end user, the philosophy taken was to identify databases which contained information on the top two material groups identified in the needs assessment along with the top four classes of material properties. The process involved looking through the tabulation to determine what materials and classes of materials properties should be used. The result of this process was the following:

<u>Materials Groups</u>	<u>Classes of Material Properties</u>
Alloys	Mechanical
Metals	Physical
	Thermal
	Chemical

Figure 1.0 Most Critical Material Groups and Classes from Needs Assessment

2.2 Apply Search Criteria to DTIC Resources

After identifying these major categories, the SCITECH Directory was examined to find a search strategy to identify databases pertaining to this type of information. Since the data collected for SCITECH input already identified data based on these types of considerations, the process involved for searching SCITECH was just using the key words identified above in a search strategy. Sixty-eight databases were identified by this search criteria. Figure 2.0 shows the structure that was used and the results from applying the search to the SCITECH database directory.

After the search was performed on the SCITECH Directory, project personnel made a cursory look through the output to determine if any databases were identified incorrectly due to problems with the search criteria. In the SCITECH sample of 68, 32 databases were removed from the list since some databases were identified for keywords, however the keywords did not correspond to the information contained in the database. For example, some databases were chosen because the title of the person responsible for the database had a keyword in it, such as mechanical engineer. Therefore these databases and other databases were removed due to inapplicability of the information deemed critical.

Search String: alloys OR metals OR metal OR mechanical OR physical OR thermal OR chemical			
Results:	alloys	hits:	14
		OR	
	metals	hits:	13
		OR	25
	metal	hits:	6
		OR	26
	mechanical	hits:	21
		OR	38
	physical	hits:	32
		OR	55
	thermal	hits:	17
		OR	57
	chemical	hits:	31
		TOTAL	68
<p><u>Note:</u> metals and metal were used as different search criteria because some databases may apply to only one metal while other databases may contain information on more than one metal. Since all metal information was needed, both metals and metal were used.</p>			

Figure 2.0 Search Strategy and Results for SCITECH

2.3 Determine Evaluation Criteria

After the initial database selection had been made, a list of criteria to apply to the selected databases was determined. This criteria would be the basis for the comparison of the databases and would help determine if the database was a feasible selection to make available through DTIC. The criteria that were identified included the following:

1. What is the data availability within the database? Is the data classified or unclassified and can DTIC gain access to it?
2. What is the access method? Can the database be accessed on-line, by diskette, by hardcopy, or a combination?
3. How much will the database cost to access? Is there any cost associated with accessing the database such as a charge to connect or the cost to obtain the hardcopy?

4. How do current end users view the database? What do end users think of the database? Is it worthwhile, is it difficult to use, what is the value of the data, are the data reliable?

In addition to the evaluation criteria listed above, research by the National Archives and Record Administration (NARA) involving databases to be archived was also investigated to determine if the criteria and databases they identified could also be applicable to this task. The primary objective of the NARA task was to identify databases throughout the federal government community that should be archived because they contain relevant information for major programs. Since the archive criteria primarily focused on major databases that have a historical long-term research value, the criteria could not be applied to this task. In addition, the databases identified did not appear pertinent to materials properties, however, another directory effort is currently looking at specific databases identified by NARA to determine their relevancy for that directory and its users.

2.4 Contact Database Distributors

After the criteria were established, the next step in evaluating the databases was to contact the database distributors to obtain additional information or changes in the original information collected in the data call. These distributors were contacted by phone. To ensure that the information gathered could be easily compared, a list of questions was made to ask each distributor. This list is shown in Figure 3.0. Summaries from the telephone conversations with the distributors are presented in Appendix A. The scientific and technical data sources from the SCITECH Directory that were contacted were:

- | | | |
|-----------------------------------|---|------------|
| 1. Physical Property Data Service | 17. CRYSTMET | 33. MMESDB |
| 2. SICPS | 18. OMIS | 34. ENGDAT |
| 3. Cutdata | 19. TRCVP | 35. HDB2 |
| 4. SMDB | 20. TRCTHERMO | 36. MIL 17 |
| 5. Physics Data Disk Selected NRD | 21. TPDF | |
| 6. Sadtler Commercial Libraries | 22. Field/Lab Data on CRAs | |
| 7. MPD Network | 23. MATCOMP | |
| 8. AlfaBET | 24. ADHESIVES | |
| 9. STN International | 25. COMPAT | |
| 10. Copperselect | 26. USAF CDDb | |
| 11. Mat.DB | 27. FACT | |
| 12. Metals Datafile | 28. Physical Data Chemical Engineering Sur-Series | |
| 13. PLASTICS | 29. Metallic Materials Data Handbook | |
| 14. AAASD | 30. MATUS | |
| 15. DIPPR | 31. SELECT | |
| 16. HTDB | 32. H Data | |

In addition to the sources from the SCITECH directory, four other data sources were investigated based on recommendations of database distributors or DoD points of contact. These sources were:

1. Technical Database Services, Inc. (TDS)
2. International Council on Scientific and Technical Information (ICSTI)
3. Information Handling Services (IHS)
4. Computerized Handbooks.

Database Evaluation Questions

The first activity of the database evaluation will be to review the information that is currently in the Scientific and Technical Numeric Database Directory. Further, fields such as Materials and Properties will be discussed to make sure that they are explicit as to the type of information in the database. In addition, the following questions will be asked to determine the applicability of the database for DTIC.

1. What is the most recent date of the data?
2. Is the database currently available through STN? Through any other network? (Note: for online database only). Availability through other media?
3. If the database was undergoing development during the time of the data call, has the database been completed or is it still unavailable?

If it is still unavailable, when is the database scheduled to be completed?
4. Would it be possible to get a list of government database users?
5. What is the procedure to make the database available to DTIC? (Costs involved, application procedures, security procedures, etc.)
6. Could DTIC be the vehicle to get the data to the users? (Such as vehicle for funding or vehicle for distribution?)

Figure 3.0 Database Distributors Questions

3.0 RESULTS

After the database distributors were contacted, the information obtained was evaluated based on the criteria identified in section 2.3. Out of the thirty-six databases that were identified and contacted, twenty-eight were commercial sources. Seventeen of the databases were removed from consideration for the following reasons:

- Eight of the identified databases (7, 9, 11, 12, 13, 14, 15, 20) are already available through STN or MPD to which DGIS already connects. (MPD is accessible through the STN network.)

Two of the sources listed in the Scientific and Technical Numeric Directory, STN and MPD, were networks that were already available through DGIS. Networks are communication links to other computers systems which may be standalone computers or networks themselves. From these networks, users can access additional information that is not available on their own system. DTIC uses DGIS to access several networks (STN, MPD, DIALOG and ORBIT). Databases available through the networks are described in Appendix B.

- Nine of the identified databases were removed from selection after contacting the database distributors due to reasons stated below.
 1. The database was still undergoing development. (4, 5, 16, 33)
 2. The database was not available to a public audience (36).
 3. The database didn't meet the end users' needs. (2, 6, 34)
 4. The item described was a tool used to set up a database rather than a database itself.(2)
 5. Data had not been updated. (3)

The remaining nineteen databases met users' needs identified from the needs assessment and the possibility of their being distributed by DTIC should be further investigated. Application of the criteria is provided in Figure 4.0.

Based on the evaluation, three of the databases (AlFaBET, ADHESIVES, and Copperselect) will soon be made available on MPD. Two of them contain information on alloys and one contains information on adhesives.

DATA SOURCE	ACCESS	GOVERNMENT/COMMERCIAL	SUBJECT
PPDS	TDS PC Product	Commercial	Chemical
AlFaBET	Soon on MPD	Commercial	Aluminum Alloys
Adhesives	Soon on MPD	Commercial	Adhesives, All Properties
Copperselect	Soon on MPD	Commercial	Copper Alloys
CRYSTMET	Telenet	Commercial	Metals
OMIS	PC Product	Government	Optical Materials
TRCVP	TDS PC Product	Commercial	Organic Compounds
TPDF	On-line	Commercial	Organic Compounds
Field/Lab Data on CRAs	PC Product	Government	Corrosion Resistant Alloys
MATCOMP	DDN	Government	Metals
COMPAT	Manual Search	Government	Metals
USAF CDDB	On-line	Government	Metals
FACT	Telenet	Commercial	Inorganic and Organic Compounds
Physical Data Chemical Eng.	Hardcopy	Commercial	Chemical Liquids
Metallic Hdbk	Hardcopy	Commercial	Alloys
MATUS	Telenet	Commercial	Metals, Composites
SELECT	Direct Dial, PC Product	Commercial	Heat Transfer Fluids
H Data	Direct Dial	Commercial	Alloys
HDB2	Direct Dial	Government	Chemical Property

Figure 4.0 Database Comparison Table

The remaining databases were then grouped according to the information contained in the data source:

- Three of the data sources (H Data, Metallic Handbook, and Field/Lab Data on CRAs) contained information on alloys.
- Five of the databases (CRYSTMET, MATCOMP, COMPAT, USAF CDDb, and MATUS) contained information on Metals.
- Six (PPDS, TRCVP, TPDF, FACT, Physical Data Chemical Eng. Sur-Series, and HDB2) contained chemical information.
- One (OMIS) contained Optical Materials.
- One (SELECT) contained heat transfer fluids.

Since the database evaluation process was primarily concerned with databases pertaining to alloys and metals, the last eight databases identified above (PPDS, TRCVP, TPDF, FACT, Physical Data Chemical Engineering Sur-Series, and HDB2, OMIS, and SELECT) were removed from the final list of databases to recommend.

Data sources in addition to those identified in the SCITECH Directory (TDS, ICSTI, IHS, and Computerized Handbooks) were also contacted. TDS was identified as another distributor of scientific and technical information similar to STN and MPD. The ICSTI was identified as an organization who also had a directory of *scientific and technical numeric* databases that could identify other databases DTIC might want to access or distribute. Both of these organizations were contacted and information on additional databases was collected and evaluated. The last two sources, IHS and Computerized Handbooks, were also investigated since these sources of data were considered critical by engineers and scientists to effectively perform their duties. IHS is an organization which distributes MIL-SPECS on CD ROM. Each specification was currently available and there was a cost associated with the service based on the type of service that was required. Information on computerized handbooks led to the discovery that most of the handbooks used by engineers and scientists are already available on networks. For example, MIL-HANDBOOK-5, a source identified in the users' needs assessment, is already available on MPD. Additional handbooks are also provided through databases available through on-line services like STN, MPD and TDS. Most of these sources had already been identified through the SCITECH directory.

4.0 CONCLUSIONS

4.1 Recommendation and Concurrence of Databases To Adopt

The database evaluation results coupled with the tabulation of the needs assessment lead to the following recommendations (figure 4.0) as to which databases DTIC should make available either by access through DGIS or by distribution. Since the end users identified alloys and metals as the most critical material groups needed, it is recommended that the databases identified in section three pertaining to these materials be made available through DTIC. These databases are listed below and their associated Points of Contact are listed in Appendix C.

Database Name	Subject	Access	Government/Commercial
Metallic Handbook	Alloys	Hardcopy	Commercial
Field/Lab Data on CRAs	Alloys	PC Product	Government
H Data	Alloys	Direct Dial	Commercial
USAF CDDB	Metals	On-Line	Government
MATCOMP	Metals	DDN	Government
COMPAT	Metals	Manual Search	Government
CRYSTMET	Metals	Telenet	Commercial
MATUS	Metals	Telenet	Commercial

Figure 5.0 Database Recommendations

4.2 Lessons Learned

This evaluation process was performed on a selected number of databases so that issues that were encountered during the process could be identified and corrected for future applications of the procedure documented in this report. Lessons learned during this task are identified below:

- **There is a lack of information regarding databases developed by the Government.** As shown in the results, only 8 of the 36 databases considered for recommendation were government databases. Other databases developed by the government were not represented. It is essential that these databases be identified so that other

government personnel are aware of these databases and can use research that has already been performed.

- **Databases or data being developed for R&D projects within the government are not being collected at project completion.** Currently, the Collection Division and Retrieval and Storage Branch primarily collect technical reports when a project has been completed. Since the project may have also required that software be developed or data be collected, these items should be identified for acquisition at project completion.

4.3 Topics for Further Research

Based on our findings, we recommend that future studies consider the following:

- **Evaluation of Tools Used To Manipulate Numeric Data:** As a result of some of the inquiries to data sources identified in the SCITECH directory and users needs assessment, there are many tools that are available to help scientists and engineers manipulate numeric data (such as EXCEL, WINGS, IDEAS, etc). Many of these tools may have not been identified. Future studies should investigate and evaluate these tools and provide users with either pointers as to how the tools can be obtained or access to the tool directly.
- **Development of a General Data Call that will help Identify Government Data Sources:** As stated in the lessons learned section, there is a possibility that some databases that have been developed for the government have not been identified. Making this information available to other users is essential so that duplicate work is not being performed. By developing a general data call that is filled out by all DoD and military components during the year, DTIC will be providing one point of contact for the departments and one source bank which contains information on all databases. This would enable users to come to one source to find out if information exists on their topics of interest.
- **Collection of Software Data from Completed Projects:** As stated in the lessons learned section, the primary documents collected at the completion of a project are technical reports. By collecting all items (data, software, databases, technical reports), DTIC researchers will have more complete resources available to them. This can be accomplished by investigating resources available to DTIC such as the Work Unit Information System (WUIS), the Technical Reports Database (TR), and the Information Analysis Centers (IACs). After these resources are initially investigated, procedures should be written to regularly identify and collect critical information and data sources after project completion.

APPENDIX A: DATABASE CONTACT SUMMARIES

1. ADHESIVES and PLASTICS

Note:

These two databases have the same contact so one phone call was made to obtain information on both databases.

Changes in Current Information:

- The POC is no longer Ms. Nancy Burgeson. Refer Users to Mr. Larry Johnson.
- Address: 15 Inberness Way E., Englewood, Colorado 80155
- Phone: (800) 447-4666

Updates/Accessibility/Cost/Distribution:

- The ADHESIVES database is currently not available on line, however it may be made available in the future. Currently only hardcopy is available and the cost is \$170.
- PLASTICS database is updated approximately every six months. Hardcopy cost is \$220 (2 volumes). Cost of diskette is the same but there also is the option of getting it one year with update for \$495. If you want to access the data via network, have to go to the network for price.
- No security requirements are required since the data is public.

2. TRCTHERMO, TRDF, and TRCVP

Note:

These databases also had the same point of contact so the POC was asked information on all databases.

Updates/Accessibility/Cost/Distribution:

- There are four supplements a year of new data for each database. No definite dates are assigned to the databases. If you want the most recent update, then you can obtain the date of the data when you sign on to the system.
- There is a hardcopy available for the TRCTHERMO. It is published from research on tables. This is the only database of the three that data has been validated. The other two are constantly being changed because they are source data.
- TRCTHERMO is available through Tymnet, Direct Dial, and Telenet. Would rather discuss prices when access method has been determined.
- Other database. TRCVP (Vapor Pressure): available on the IBM PC. Available through tech DB on-line (NY). (2) Experimental Data on Literature (TRC Source Database, TRDF). They are in the process of putting this data on line. Thermodynamic data.

3. CRYSTMET

Changes in Current Information:

- The CRYSTMET database update was complete in September 1991. The database currently has 40,770 entries.
- The POC is no longer Dr. G. H. Wood so refer users to Robert Gough.

Updates/Accessibility/Cost/Distribution:

- Mr. Gough could not supply a list of government users because he respects his user's privacy.
- Current online networks are the following: SpriNt, Telenet, BT-Tymnet, Dataapac, and Internet.
- Third party software will cost \$1500 (lease) and will be provided on tape; However, this software does not provide the search software needed to access the database.
- Instead of leasing the software, also have the option of opening an on-line account with CRYSTMET. If this route is chosen, the search software for CRYSTMET is available along with data manipulation tools.
- If need access procedures, please contact Robert Gough.

4. Physics Data Disk Selected Numeric Reference Data

Changes to Current Information:

- None

Updates/Accessibility/Cost/Distribution:

- The databases is available on diskette only. However some consumers have put the database on their local area network and have had no problem.
- The most recent data of update to the database is 1991. Could not give a specific month or day.
- There are no government users using the database yet since it really is only in beta testing. After the meeting next week with the committee, Dr. Scott will know more about the access requirements, etc. He asked us to call him back at that time.

New Contact:

- New Contact to investigate: ICSTI - International Council of Scientific and Technical Information. This group also has a directory of Numeric Databases. The databases are grouped by discipline and contain a brief description of the database along with access instructions. Dr. Scott will send me copy of what is in the directory because he thinks it will be useful.

5. Metals Datafile

Changes to Current Information

- The interface presented in the Metals datafile are Menus and keyboard commands. The data is presented in a tabular format.

Updates/Accessibility/Cost/Distribution:

- The metals datafile is updated at least 10 times a year.
- The database is available on the MPD Network through STN. In addition, the database is also available on ESAN and ORBIT.
- The Access Requirements and cost to access the Metals datafile were not known. The distributor referred us to his MPD contact. MPD Contact: Bill Weida (614) 447-3661
- A list of government DB users was not available.

6. USAF Chemical Defense DB (USAF CDDDB)

Note:

- This database is alive again - new effort. The effort started September 1990 and is funded through September 1991. The main goal is to transform the PC platform to a VAX 11/780 platform.
- New users would be better off using the PC version.

Updates/Accessibility/Cost/Distribution:

- A Modem will be available at end of calendar year for connection to the USAF Chemical Defense Database. The Data will be moved over there at end of month.
- Contact did not have a list of DB users
- Need to contact Steve Lawhorne (COTR for CBIAC) for information on accessing the database. (301) 671-2938.
- The Tables in the old database have been restructured. Now have the following:
 - Bibliographic/References
 - Material Specification
 - Test Specification
 - Chemical
 - Test Data Tables - All degradation tables combined into one.
- Would be interested to use DTIC to distribute the data

7. CRDEC Materials Compatibility and Permeability DB (MATCOMP)
Changes to Current Information:
- None
- Updates/Accessibility/Cost/Distribution:
- This database is frequently updated because it is a working database in support of an R&D effort.
 - There is no charge for accessing the data.
 - Users are primarily CRDEC people (US Army Chemical Research Development and Engineering Center).
 - A DGIS type connection would not be any trouble at all.
 - There is no classified data on the system however some of the databases have data considered proprietary so may have to limit non-government access.
8. Sadtler Commercial Libraries
Changes to Current Information:
- None
- Updates/Accessibility/Cost/Distribution:
- There are 15 databases in the Sadtler Commercial Libraries
 - The cost to the user depends on the size of the collection the user is requesting (i.e., how many spectra in the collection, \$1.50 per spectra). There is also a diskette version for which a lease agreement must be purchased.
 - A hardcopy version is also available. Generally, there are 300 spectra in a volume. A Volume usually costs around \$380. Number of volumes in a collection varies.
 - Government Users Identified: Aberdeen Proving Grounds.
 - There are no security restrictions involved to access the data.
9. Compatibility between energetic and engineering materials (COMPAT)
Changes to Current Information
- POC Lanny Schlosberg has left the company so please change point of contact to Bill DePiero.
 - Phone number: (201) 724-5859
- Updates/Accessibility/Cost/Distribution:
- The database is updated as information changes.
 - The Current access of the database is primarily searches. The On-line copy of the database has not been updated since 1990. This system (on the VAX) will be abandoned in the future. Currently, the company is not allowing access. Performing call in searches instead.
 - Searches are performed for government employees or contractors that work on government contracts. The search usually takes 5 minutes for a quick search to several hours. Cost of a search is \$60/hour.
 - The company is coming out with a PC version. Currently, it is not known how the database will be distributed. The PC version will not be out till the 3rd or 4th quarter of 1992.

10. HiTemp Materials Properties Database (HTDB)

Changes to Current Information:

- POC: Ellen McCally
- The database is still under development. Does not really have a date for completion. On-going project.

Updates/Accessibility/Cost/Distribution:

- At the end of October, it should be decided whether the database will be made available to government users.
- Access Method: PC (386 SX). Runs with enable version 3.0. They are currently switching platforms.
- The HiTemp Materials Properties database is a bibliographic DB. You can search any field you want.
- A hardcopy of the database is available. The user needs to specify what they would want to know, request a hardcopy and it will be sent to them.
- Takes 3 - 1.44M floppies for the database.

11. SMDB (Structural Materials Electronic Database)

Changes to Current Information:

- This database is still undergoing development. It is scheduled for completion in 1993.
- Currently there are 5 records in the database. There are 40 entries in 5 different files. Over 100 records will be available in the finished product.
- Full Address: Oak Ridge, TN 37831-8056.
- Phone: (615) 574-0659 or 0657

Updates/Accessibility/Cost/Distribution:

- Not sure how the database is going to be distributed since it is a government organization. The database is already available in hardcopy (Structural Materials Handbook).
- The first four databases deal with concrete and the last one deals with rubber.

12. Mat.DB
Changes to Current Information:
• POC: Dave Stephens
Updates/Accessibility/Cost/Distribution:
• The Mat.DB is updated every couple of years. The project runs in parallel with the handbooks.
• Price:
 Program: \$695
 Each database: \$369 (there are 7 available)
 There are discount sales available for members of ASM. ASM service is monthly abstract.
• Around the end of the year, MAT.DB will also have composites and plastics.
• The Materials Handbook do not contain the same materials that are available on-line.
• MAT.DB provides a specific format that can be transferred into ASCII.
13. Copperselect
Note:
• Copperselect is more of a tool than an actual numeric database. The user has to supply the database files that contain the data, and copperselect helps you to incorporate the database into the existing data.
• May become available on MPD soon. \$10 per program.
Changes to Current Information:
• None
14. Cutdata
Changes to Current Information:
• The database still has not been updated since 1984.
• New number for POC: (513) 948-2000
Updates/Accessibility/Cost/Distribution:
• Not available on any networks. There is a one time single user license fee of \$895.
• Government Users: NIST
• Access Requirements: License

15. Optics MODIL Information System (OMIS)
Changes to Current Information:
- The database is no longer provided on the VAX. Now located on a PC environment under UNIX. They are in the process of developing a system to distribute on the PC. No costs or requirements were known at the time.
 - POC: Marty Marchbanks. For connection requirements would need to talk to Mr. Marchbanks.
- Updates/Accessibility/Cost/Distribution:
- The database is updated continually
 - There are currently 220 materials in the database and you can get 2800 different kinds of reports.
 - Government Users: TAIS. TAIS and DLA are required for the special security.
16. Field/Lab data on corrosion/cracking of CRAs
Changes to Current Information:
- The database is updated approximately 9/90
 - The database is now accessible by others instead of just being proprietary.
 - The number of records in the database is now 140
 - Was updated from DBase III to DBase IV
- Updates/Accessibility/Cost/Distribution:
- Access is through Diskette. Pricing is as follows:
3 1/2 or 5 1/4 Basic Database (\$995)
Expert system with database (\$3500)
Written in: DBase IV
 - In the complete package, the expert system advises about corrosion resistant alloys (CRAs). The expert system is written in LISP.
 - Modem access is not currently available but maybe sometime next year.
 - Listing of government users was not available because it was funded primarily through commercial.
17. Facility for the Analysis of Chemical Thermodynamics
Changes in Current Information:
- None
- Updates/Accessibility/Cost/Distribution:
- Updated partially on a regular basis. There will be a major update at the end of the year.
 - Available through the Telenet network. Price is based on contact time.
- POC: Professor Thompson. (613) 544-6159.
- U.S. Government Users: NIST, Naval Research Labs

18. AAASD - Properties of Aluminum
Changes to Current Information:
- None
19. Physical Property Data Service (PPDS)
Changes in Current Information:
- The database was created in 1972
 - Phone number (011) 44788-560833
 - The POC is either Dr. Beryl Edmonds or Mr. Arshad
 - Hardware Access Mainframe Requirements: DEC, IBM or plug-compatible, Prime.
- Updates/Accessibility/Cost/Distribution
- The database is distributed in the U.S. by the following organization:
Ms. Wendy Fenwick
Technical Database Services, Inc.
10 Columbus Circle
New York, NY 10019
Phone number: (212) 245-0044
Fax number: (212) 247-0587
20. DIPPR Data Collection
Changes to Current Information:
- Address: University Park, PA 16802
- Updates/Accessibility/Cost/Distribution:
- There is a new update is being released by them in January. NIST should have update around May. Will have 1,232 records in January.
 - The database is also available on-line through the following: STN, NIST, and Technical Database Services (TDS). Purely bibliographic searches and just data are provided by STN. NIST or Technical Database Services has data a provides tools to perform calculations with.
 - Government Users: Does not have a list, would be handled by NIST. NIST handles all marketing.
21. Incorporated into a larger program for calculating heat loss
Note:
- This is not really a database or source but is rather a program sponsored by the army. The project deals with building an army shelter. The tool takes data that is entered on a structure and allows a fortran program to do calculations on it. It is not really a database that can be distributed to government users.

22. STN International, MPD

Note:

- POC: J. Gilbert Kaufman (614) 447-3706 (STN)
- POC: Bill Weida (MPD)

Updates/Accessibility/Cost/Distribution

- Databases from STN that are new:
 - ARTX - Registry of Toxic Exposure Standard Hazardous Hazardous Substance Database
- New in 1992: Chemical Properties Databases will have the capability just like MPD search to do a search on files.
- New database now provided in MPD:
 - MARTUF
 - STEELTUF (both are manufacturer of steel DB)
 - PLASNEW - new developments in areas of plastics
- New databases that will be coming soon:
 - NISTCERAM - Structural Ceramics
 - PDLCOM - Compatibility of Plastics in the environment
- Additions to existing databases:
 - ALFRAC and AAASD have been greatly expanded since 1990.
- There is also a Chemical Physical Properties Cluster that MPD producers provide. In December it will be renamed the Chemical Property Data Network.

23. AlFaBET

Changes to Current Information:

- New POC Phone Number: (515) 294-6048, (515) 294-8216
- New Address: 374 Town Engineering Bldg., Iowa State
- The Number of Records the database now contains is 18,000
- The database will not be made available for six months to a year
- The database will be available through MPD

24. Physical Data, Chemical Engineering Sur-Series, Metallic Materials Data Handbook
Defense Standard 00-932, MATUS, SELECT, H. Data, MMESDB, ENGDAT

Changes to Current Information:

- None

25. HDB2

Changes to Current Information:

- New phone number for POC: (505) 272-7200

26. SICPS

Note:

- The SICPS data source identified is really a tool to help calculate heat transfer

27. MIL 17

Changes to Current Information:

- None

Note:

- This data source is proprietary and is not available to the public

APPENDIX B: DATABASES AVAILABLE THROUGH DGIS

DIALOG DATABASES

Database Name	Description
INSPEC	This database contains abstracts for three Science Abstracts print publications: PHYSICS ABSTRACTS ELECTRICAL AND ELECTRONICS ABSTRACTS, and COMPUTER AND CONTROL ABSTRACTS.
COMPENDEX PLUS	This database provides coverage of approximately 4,500 journals and selected government reports and books. It also includes records of significant published proceeding of engineering and technical conferences.
METADEx	This database is produced by ASM International and provides comprehensive coverage of international literature on the science and practice of metallurgy. Included in this database are REVIEW OF METAL LITERATURE, METALS ABSTRACTS, METALS ABSTRACTS INDEX, ALLOYS INDEX and STEELS ALERT.
WORLD ALUMINUM ABSTRACTS	This database includes information abstracted for scientific and technical patents, government report, conference proceedings, dissertations, books and journals.
STANDARDS AND SPECIFICATIONS	This database provides bibliographic access to all government and industry standards, specifications and related documents which specify terminology, performance testing, safety, materials, and products.
NONFERROUS METALS ABSTRACTS	This database covers all aspects of nonferrous metallurgy and technology. Sources include journals, monographs, British patents, reports, standards, and conference papers.
PASCAL	This database contains abstracts for journals, doctoral and masters theses, reports, conference proceedings and books.
MATERIALS BUSINESS FILE	This databases covers technical and commercial developments in iron and steel, nonferrous metals, and engineered materials.

STN DATABASES

Database Name	Description
BEILSTEIN	Organic chemistry database that contains values for five physical properties: melting point, boiling point, density, optical rotatory power, and refractive index.
DIPPR	Numeric pure component physical property data for chemical substances. Contains: molecular weight, critical constants, and boiling points
HODOC	Physical and chemical data for organic compounds including boiling point, melting point, density, refractive index, optical rotatory power, solubility, crystal property description, and molecular weight.
ICSD	Database that give complete structural information for inorganic compounds.
INSPEC	Database that contains citations with abstracts and numeric data relating to world physics, electronics, and electrical engineering, computer and control, and information technology literature.
JANAF	Contains critically evaluated chemical thermodynamic properties for inorganic compounds and organic substances containing only one or two carbon atoms.
NISTFLUIDS	Calculation programs. Substances covered are argon, butane, ethane, ethylene, helium, hydrogen, isobutane, methane, nitrogen, nitrogen trifluoride, oxygen, and propane. Variables include density, pressure, and temperature data.
NISTTHERMO	Compilation of critically evaluated chemical thermodynamic properties of inorganic and organic substances containing one or two carbon atoms.
TRCTHERMO	Database that contains most frequently used thermodynamic data including: boiling point, critical constants, density, dynamic viscosity, enthalpy, entropy, Gibbs energy function, heat capacity information, melting point, molecular weight, and vapor pressure.

MPD DATABASES

Database Name	Description
METALS DATAFILE	This database contains 40,000 records of alloy systems.
MIL-HDBK-5	This database contains numeric design, mechanical and physical properties for metallic aerospace materials. Contents include steels, high temperature metals, and aluminum, magnesium and titanium alloys.
PLASPEC	This database contains numeric data from manufacturer's specifications for manufactures plastics, including mechanical, physical and thermal properties.
STEELTUF	Numeric toughness value data from test of steels for power and petroleum industry applications.
AAASD	Nominal composition and composition limits, typical mechanical physical properties and minimum tensile properties, and aluminum alloys.
ALFRAC	Results of plane-strain fracture toughness test of high-strength aluminum alloys together with supporting tensile and notch-tensile test of high-strength aluminum alloys.
IPS	Numerical properties on commercially available grades of plastics. Contains physical, mechanical, thermal, and electrical properties, flammability, and processing characteristics.
MARTUF	Results of individual tests covering the toughness of steels identified as most important by the Ship Structures Committee and the U.S. Coast Guard. Includes composition, fabricating practice and welding procedures.

ORBIT DATABASES

Database Name	Database Description
Ceramic Abstracts	Covers scientific, engineering, and commercial literature pertaining to ceramics and related materials, including processing and manufacturing aspects, with more than 118,000 records.
CORROSION	Contains more than 2,400 records on the effects of over 600 agents on the most widely used metals, plastics, nonmetallics, and rubbers over temperature ranges.
Engineered Materials Abstracts	Covers journal articles, conference papers, reviews, technical reports, books, dissertations, government reports and patents in the fields of material engineering. Topics include ceramics, composites, and polymers.
Imaging Abstracts	Contains 65,000 abstracts covering photographic theory, processing, cameras and camera accessories, lighting, imaging systems radiography, videos, filters, and holography.
Materials Business File	Includes abstracts covering all commercial aspects of iron and steel, non-ferrous metals and non-metallic materials, including ceramics, polymers, composites and plastics.
METADEx	Provides 830,000 records on metals and alloys concerning the following: processes, properties, materials classes, applications, specific alloy designations, intermetallic compounds and metallurgical systems.
Metals Data File	Provides designation and specification numbers for ferrous and non-ferrous metals and alloys, compositions, forms, and applications, manufacturers, element concentration, and mechanical and physical properties.
RAPRA Abstracts	Coverage of the world's primary database on technical and commercial aspects of the rubber, plastics, and polymer composites industries.
Weldasearch	Contains over 113,000 citations in the areas of joining metals and plastics, metal spraying and thermal cutting. Topics covered include welding design, welding metallurgy, fatigue and fracture mechanics, corrosion and more.
World Ceramic Abstracts	Companion file to RAPRA Abstracts. Provides coverage from literature on all aspects of ceramics including: high tech ceramics; white-ware; vitreous enamels and refractories; clay-based building materials; glasses; cements and mortars.
World Surface Coatings Abstracts	Contains over 142,000 records on all aspects of paints and surface coatings. Information is both technical and commercial and includes such topics as pigments, additives, resins, solvents and coatings.

APPENDIX C: DATABASE POINTS OF CONTACT

1. **Metallic Materials Data Handbook Defense Standard 00-932**
POC: Mr. Michael E. Grayley
27 Corsham Street
London, England
(071) 490-5151
2. **Field/Lab Data on Corrosion/Cracking of CRAs**
POC: Mr Sridharan Srinivasan
11115 Mills Road, Suite 102
Cypress, TX 77429
(713) 890-3356
3. **Hydrogene Data (H Data)**
POC: Monsieur Lequain
8-10, rue Mario Nikis 75738 Paris Cedex 75
France
(331)42736560
4. **USAF Chemical Defense Database (USAF CDDDB)**
POC: Jim McNealy
CBIAC
505 King Avenue
Columbus, OH 44124
(301) 676-9703
5. **CRDEC Materials Compatibility and Permeability DB (MATCOMP)**
POC: Steve Lawhorne
Battelle Edgewood Operations
ATTN: CBIAC
2113 Emmorton Park Road
Edgewood, MD 21040
(301) 671-2938
6. **Compatibility between Energetic and Engineering Materials (COMPAT)**
POC: Mr. Bill DePiero
Picatinny Arsenal, NJ
(201) 724-5859
7. **National Research Council Metals Crystallographic Database (CRYSTMET)**
POC: Dr. G H Wood
National Research Council of Canada
Montreal Road Building M.55
Ottawa, CANADA
(613)993-3294

8. Materials User Service (MATUS)
POC: J E Martini-Vvedensky
15-17 Ingate Place
London, England
441/716228155